

ADDITIONAL NOTES ON THE GENUS LIPPIA. VI

Harold N. Moldenke

LIPPIA BRACTEOSA (Mart. & Gal.) Moldenke

Additional bibliography: Moldenke, *Phytologia* 38: 482. 1978.

Recent collectors describe this plant as a shrub, 1.5--2.5 m. tall, and have found it growing on steep heavily wooded slopes and in steep-walled canyons with tropical deciduous forest of Hauya, Euphorbia, Diospyros, Cedrella, Trichilia, and Heliocarpus, at altitudes of 800--1200 m., flowering in February and December, and fruiting in December. Cruz Cisneros reports finding it in "huerto de frutales en elfondo de barranca con bosque tropical deciduo de Bursera". The corollas are said to have been "pale-yellow" on Breedlove 23049.

The Webster, Miller, & Miller 11143, distributed as L. bracteosa, is actually L. graveolens H.B.K.

Additional citations: MEXICO: Chiapas: Breedlove 11194 (Ld), 23049 (Ld, N); Laughlin 659 (Ld); F. Miranda 4937 (W--2508307); Purpus 10146 (Mu), 10380 (Mu); Ton 3403 (Ld, Mi). Michoacán: Digué s.n. [Octobre 1907] (W--2565945). Oaxaca: Cruz Cisneros 2351 (Mi); Pringle 6175 (Ms--30878, Mu--1821). State undetermined: Karwinski s.n. (Mu--20, Mu--22).

LIPPIA BRADEANA Moldenke, *Phytologia* 32: 334--335. 1975.

Bibliography: Moldenke, *Phytologia* 32: 334--335 (1975) and 34: 258. 1976; Anon., *Biol. Abstr.* 61: ACl.640. 1976; Hocking, *Excerpt. Bot. A.28*: 259. 1976.

Material of this species has been misidentified as and previously reported by me as L. elliptica Schau.

Citations: BRAZIL: Minas Gerais: Duarte 7850 [Herb. Brad. 27897] (N--type).

LIPPIA BRADEANA var. VELUTINA Moldenke, *Phytologia* 32: 335. 1975.

Bibliography: Moldenke, *Phytologia* 32: 335 (1975) and 34: 258. 1976; Anon., *Biol. Abstr.* 61: ACl.640. 1976; Hocking, *Excerpt. Bot. A.28*: 259. 1976.

Material of this variety has previously been misidentified and distributed as L. eupatorium Schau.

Citations: BRAZIL: State undetermined: J. E. Pohl s.n. (Mu--1118--type, Z--photo of type).

LIPPIA BRADEI Moldenke

Additional bibliography: Moldenke, *Phytologia* 12: 105. 1965; Moldenke, *Fifth Summ.* 1: 155 (1971) and 2: 890. 1971.

LIPPIA BURTONII J. G. Baker

Additional & emended bibliography: J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 278 & 281. 1900; Moldenke, Phytologia 13: 349. 1966; Moldenke, Fifth Summ. 1: 230, 237, & 246 (1971) and 2: 890. 1971.

Baker (1900) cites only the original Burton collection from Zaire.

LIPPIA CAFFRA Sond.

Additional bibliography: Moldenke, Phytologia 13: 349. 1966; C. A. Sm., Common Names S. Afr. Pl. 601. 1966; Moldenke, Fifth Summ. 1: 256 (1971) and 2: 890. 1971.

LIPPIA CALLENSI Moldenke

Additional bibliography: Moldenke, Phytologia 12: 107--108. 1965; Moldenke, Fifth Summ. 1: 230 (1971) and 2: 890. 1971.

LIPPIA CALLENSI var. VILLOSA Moldenke

Additional bibliography: Moldenke, Phytologia 12: 108. 1965; Moldenke, Fifth Summ. 1: 227 & 230 (1971) and 2: 890. 1971.

LIPPIA CALLICARPAEFOLIA H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 217. 1817.

Additional & emended synonymy: Lippia callicarpifolia H.B.K. ex Loes., Verh. Bot. Ver. Brand. 53: 78. 1912 [not L. callicarpifolia Schau., 1912 & 1959]. Lippia callicarpaefolia H.B.K. apud M. Martínez, Pl. Med. Mex., ed. 2, 608, sphalm. 1939. Lippia callicarpoefolia H.B.K. ex Puig, Bull. Soc. Hist. Nat. Toulouse 103: 319, sphalm. 1967. Lippia callicarpacofolia H.B.K. apud M. Martínez, Pl. Med. Mex., ed. 5, 639, sphalm. 1969.

Additional & emended bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 217 (1817) and ed. quarto, 2: 268--269. 1818; Hook. & Arn., Bot. Beech. Voy. 305. 1838; Schau. in A. DC., Prodr. 11: 591--592 & 608. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 265. 1858; Barnhart, Bull. Torrey Bot. Club 29: 590 & 597. 1902; F. D. Kern, Mycologia 3: 289. 1911; M. Martínez, Pl. Med. Mex., ed. 1, 449 & 621 (1933) and ed. 2, 445, 450, & 608. 1939; Cummins, Lloydia 3: 16. 1940; O'Gorman, Mex. Flow. Trees 70 & [71]. 1961; Hocking, Excerpt. Bot. A. 10: 271. 1966; Moldenke, Phytologia 14: 404--405. 1967; Moldenke, Résumé Suppl. 16: 23. 1968; M. Martínez, Pl. Med. Mex., ed. 5, 486 & 639. 1969; A. L. Moldenke, Phytologia 18: 124. 1969; Sanchez Sanchez, Fl. Val. Mex., ed. 1, 330, fig. 264B. 1969; El-Gazzar & Wats., New Phytol. 69: 483 & 485. 1970; Gibson, Fieldiana Bot. 24 (9): 216. 1970; Moldenke, Fifth Summ. 1: 71, 79, & 366 (1971) and 2: 550--552, 555, 557, 559, 600, 658, & 890. 1971; El-Gazzar, Egypt. Journ. Bot. 17: 75 & 78. 1974; Troncoso, Darwiniana 18: 339 & 410. 1974; Hinton & Rzedowski, Anal. Esc. Nac. Cienc. Biol. 21: 75. 1975; Moldenke, Phytologia 28: 431 (1974), 31: 402 (1975), 36: 40 (1977), and 38: 478. 1978.

Additional illustrations: M. Martínez, Fl. Med. Mex., ed. 1, 449 (1933) and ed. 2, 450. 1939; O'Gorman, Mex. Flow. Trees [71] (in color). 1961; Sanchez Sanchez, Fl. Val. Mex., ed. 1, fig. 264B. 1969.

It should be noted here that the emended dates of publication for the H.B.K. works given above have been authenticated by Barnhart (1902).

Recent collectors describe L. callicarpaefolia as a shrub, subshrubby climber, or regular aromatic tree, to 8 m. tall, the crown 2 m. wide, and the trunk 40 cm. in circumference (Rosas R. 114). They have encountered it in dry grass, in areas of secondary vegetation, and in sun or partial shade in moderately moist areas, at altitudes of 660—2000 m., flowering in November, and fruiting in February and November. Hinton reports it "not very frequent". The Rosas R. 114, cited below, is placed here tentatively — it is really too immature for certain identification and may actually not even be verbenaceous. The corollas are said to have been "yellow" on Molina R. 21367.

O'Gorman (1961) lists the vernacular names, "Rosa de Castilla, salvia real, salvia poblana. (Not to be confused with the true salvias which belong to the mint family)". He continues: "The flowers of this pretty shrub remind one of the lantanas but differ in that they are rosettes of bracts with tiny flowers almost hidden among them. The heads are about three-quarters of an inch in diameter and are arranged in spikes, the long, rose-hued peduncles springing from the axils of the leaves. The bracts are rose-purple, irregularly overlapping in several ranks. The leaves look very much like those of the lantana.

"Sometimes growing to the size of a small tree, Lippia is more commonly of shrub size. It has been found near México City in the Cañada de Contreras and near Yautepec, Morelos, as well as on the outskirts of Cuernavaca and in the state of Puebla.

"The flowers are used in a tea 'against inflammation'. It is said that an infusion of the leaves and flowers has properties useful as a stimulant."

Gibson (1970) remarks that "The Mexican L. callicarpaefolia, which in its foliage and large flowering heads does resemble L. substrigosa, differs markedly in the dichasial inflorescence and conspicuously colored (rose to purple) bracts".

Martínez (1969) says of L. callicarpaefolia: "Existe en los Estados de México, Morelos, Puebla y Guerrero. Usar el cocimiento de las flores 'contra la inflamación'. La Farmacopea Mexicana dice que la infusión de las hojas y flores al 1% tiene propiedades estimulantes. No debe confundirse con la rosa de Castilla (Rosa centifolia), que se cultiva como ornamental."

Sanchez (1969) adds the vernacular name, "mastranso", and says "Arbusto que mide 2--4 m de altura, con las hojas opuesto-cruzadas, elíptico-lanceoladas, que miden 8-12 cm de largo, con el ápice agudo, la base angosta, borde crenado, escabrosas en la cara superior, tomentosas en la inferior. Flores con las corolas purpúreo-

amarillentas, agrupadas en espigas comprimidas, situadas por grupos en la axilas de las hojas, con las brácteas grandes y ensanchadas." He asserts that in the Cañada de Contreras it flowers in September.

Another vernacular name recorded for the species is "gusanillo". It should also be noted here that the L. callicarpifolia credited to Schauer (referred to in the synonymy above) belong in the synonymy of L. pringlei Briq., as does also the L. callicarpifolia var. briquetiana of Loesener.

Loesener (1912) maintained L. bicolor Kunth & Bouché as distinct from L. callicarpaefolia, citing for the former Seler 376 from Morelos and for the latter Seler 2028 from Oaxaca. Concerning the latter collection he notes "Da die Inflorescenzen noch nicht voll entwockelt sind, ist die Bestimmung unsicher" and concerning the former collection "Die Pflanze wurde in Plant. Sel. I. nach der Bearbeitung Schauers in DC. Prodr. XI. als L. callicarpifolia H.B.K. bestimmt, der seit Schauer für diese Art allgemein üblichen Bezeichnung. Ein genauer Vergleich der Originale zeigt aber, dass der Name L. callicarpifolia H.B.K. für eine andere Art zu gelten hat."

Kern (1911) lists Puccinia lippiae Speg. from Lippia myriocephala Schlecht. & Cham. (as determined by John Donnell Smith) from Laguna in Amatitlan, at an altitude of 1200 meters [no. 5209]. However, since this host is not known from that province, it is probable that the actual host is L. callicarpaefolia. Cummins (1940) definitely records Prosopidium lippiae (Speg.) Arth. on L. callicarpaefolia on the basis of Holway 5241 from Mexico.

Material of L. callicarpaefolia has been misidentified and distributed in some herbaria as L. kellermanii Greenm. On the other hand, the Karwinski s.n., distributed as L. callicarpaefolia, actually is L. bracteosa (Mart. & Gal.) Moldenke, while Bourgeau 2983 is L. myriocephala var. hypoleia (Briq.) Moldenke, Dunn & Dunn 18631 and Pringle 2743 are L. pringlei Briq., and Hartweg 560 and P. C. Standley 69695 are L. substrigosa Turcz. (erroneously reported as L. callicarpaefolia by me in 1965).

Additional citations: MEXICO: Chiapas: MacDougall s.n. [April 8, 1971] (Ld, N). Guerrero: Hinton 9838 (Se—103339, Tu—112018), 11633 (Se—103425), 14868 (Se—103430). México: Gilly & Simpson 23 (N); J. Rzedowski 21829 (Au—254851), (Ip). Michoacán: Hinton 12383 (Se—103426), 12945 (Se—97684); R. McVaugh 22697 (Ip). Morelos: Ghiesbreght 287 (Mi); Pringle 6201 (Ms—30868, Mu—1828). Veracruz: Rosas R. 114 (Ip, W—2669015). State undetermined: Karwinski s.n. (Mu—21). GUATEMALA: Huehuetenango: Molina R. 21367 (N). CULTIVATED: Germany: Herb. Kummer s.n. [hort. Monac. 1848. 18.XII] (Mu—24), s.n. [VI.1857] (Mu—1193); Herb. Zuccarini s.n. [1846] (Mu—23). LOCALITY OF COLLECTION UNDETERMINED: Pavon 36 ["Peru, 1868"] (P).

LIPPIA CAMPESTRIS Moldenke

Additional bibliography: Angely, Fl. Anal. Paran., ed. 1, 575. 1965; Moldenke, Phytologia 12: 112--113. 1965; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 890. 1971; Moldenke, Phytologia 36: 36 (1977) and 38: 479. 1978.

Hatschbach describes this plant as xylopodiferous, found it growing on rocky campos and on "campo de solo vermelho", flowering in September and October. The corollas are said to have been "yellow" on his nos. 27189 & 37109. Pabst refers to the plant as a subshrub, the flowers [corollas] "yellow, later darkening".

Material of *L. campestris* has been misidentified and distributed in some herbaria as *L. arechavaletae* Moldenke.

Additional citations: BRAZIL: Paraná: Hatschbach 27189 (Z), 37109 (Ld). Rio Grande do Sul: Pabst 6614 [E. Pereira 6788; Herb. Brad. 22516] (Mu).

LIPPIA CANDICANS Hayek

Additional bibliography: Moldenke, Phytologia 13: 350. 1966; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 890. 1971.

Recent collectors refer to this plant as a shrub, 2--3 m. tall, and have found it growing in forest margins in areas of rocky sandstone cerrado and open rocky hillsides with white sandy soil sloping down to grassy brejo, creek, and adjacent gallery forest, in cerrado, and "common in capoeira thickets", valley flats, capoeira, and grazed areas of grasses near swampy creek margins, and in campos bordering on gallery forests in areas of grassy meadows and adjacent sandy campo, at altitudes of 700--1300 m., flowering from January to March. The corollas are said to have been "white" on Irwin & al. 21991, "white, the tube yellow within" on their no. 28042, and "white, the throat yellow" on their no. 23294, and "white with tiny yellow eye" on Anderson & al. 35351.

Additional citations: BRAZIL: Maranhão: Eiten & Eiten 4162a (N). Minas Gerais: Anderson, Stieber, & Kirkbride 35351 (Ld, N, W--2709311); Irwin, Fonsêca, Souza, Reis dos Santos, & Ramos 28042 (Ld); Irwin, Reis dos Santos, Souza, & Fonsêca 21991 (Ld, N), 23294 (Ac, N).

LIPPIA CARDIOSTEGIA Benth.

Additional bibliography: Moldenke, Phytologia 14: 405. 1967; Moldenke, Résumé Suppl. 16: 3 (1968) and 17: 2. 1968; A. L. Moldenke, Phytologia 18: 122. 1969; Gibson, Fieldiana Bot. 24 (9): 208--209. 1970; Lowden, Taxon 19: 21 & 31. 1970; Moldenke, Fifth Summ. 1: 71, 80, 83, 85, 86, 88, & 91 (1971) and 2: 551 & 890. 1971; Moldenke, Phytologia 23: 415 & 416. 1972; Rouleau, Taxon Index Vols. 1-20, part 1: 216. 1972; Moldenke in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 67, 69, & 146. 1973; Moldenke, Phytologia 28: 432 & 433. 1974; Molina R., Ceiba 19: 96. 1975; Moldenke, Phytologia 38: 398. 1978.

Gibson (1970) reduces L. lucens Standl. and L. hypoleia var. ovatifolia Moldenke to synonymy here and lists the common names, "chiliqua", "coronchoch", and "vara fina". She gives its distribution as "Damp or dry, often rocky, brushy plains and hillsides, sometimes in open, mixed forest, 150--1,500 meters; Alta Verapaz; Chimaltenango; Chiquimula; Escuintla; Guatemala; Huehuetenango; Jutiapa; El Quiché; Sacatepéquez; Santa Rosa. Southern Mexico; El Salvador; Honduras; Nicaragua; Costa Rica." She comments that "This species is extremely variable, especially in leaf size and length of peduncles, but there seem to be no definite characters by which the various forms can be separated. One specimen, Steyermark 31596, is atypical because of its relatively narrow, oblanceolate to elliptic-oblong leaves." She cites Molina R. 1456, 1837, & 3213, P. C. Standley 26473, and Williams & Molina R. 10802, regarded as L. lucens Standl. by me.

Recent collectors describe what I regard as true L. cardiostegia as a "woody herb", 1--1.5 m. tall, a small weak shrub, 0.5--4 m. tall, or even as a tree, 4--5 m. tall, the trunk 2--3 cm. in diameter. They have encountered it in secondgrowth, on farmlands, in volcanic clinkers, in areas of mixed forests and clearings, in wet "matorrales", in somewhat disturbed soil, and on cutover hills often with low or scrub forest, at altitudes of 5--1700 meters, flowering in March, August, and from October to January, fruiting from September to March. Laughlin found it "on shrubby slopes with Quercus, Hauya, Bursera, and Heliocarpus"; Harmon & Dwyer "in good stand of pines with oaks and more mesic draws"; and Breedlove "on slopes with scrubby secondgrowth of Solanum, Ficus, Randia, Byrsonima, and Verbesina". Jiménez says "creciendo al sol en barranco con poca vegetación". Heithaus reports it "uncommon" in disturbed areas and Frankie found it "not common". On the other hand, Wilbur & Stone report it "common" on dry, open, wooded slopes and the Molinas report it "common" or "frequent" on dry steep slopes, in mixed moist forests, and in dry or wet thickets and riverine thickets. Neill encountered it in deciduous tropical forests, while Hall & Bockus refer to it as a "bog shrub" growing in sunny spots near outcrops of basalt rock.

The corollas are said to have been "white" on Breedlove 20304, Heithaus 474, and Laughlin 2153, "cream" on Molina R. 13106, 13556, 21989, & 22062, "cream, yellow in center" on Jiménez M. 1576, "blancas con boca amarilla" on Jiménez M. 4183, "greenish-yellow" on Molina R. & Molina 24585, "pale-yellow" on Molina R. 21450 and Williams & al. 40076, "yellow" on White & White 103, and "yellow or white" on Frankie 319a.

Davis (1910) and Lowden (1970) report the species as infested by the fungus, Cercospora cardiostegiae Davis.

Material of L. cardiostegia has been misidentified and distributed in some herbaria as L. asperifolia Rich., L. brenesii Standl., L. myriocephala Schlecht. & Cham., and even as Cordia polycephala (Lam.) I. M. Johnst. On the other hand, the Harmon & Dwyer 3076,

distributed as L. cardiostegia, is actually L. chiapasensis Loes., Molina R. & Molina 24429 is L. controversa Moldenke, McCaffrey DMC.39 is L. costaricensis Moldenke, and Molina R. 13498 is L. substrigosa Turcz.

Additional citations: MEXICO: Chiapas: Breedlove 12098 (Ld), 13921 (Ld), 14946 (Ld), 20304 (N), 23339 (Ld), 27267 (Ld); Breedlove & Thorne 21308 (Ld); Laughlin 2153 (Ld); F. Miranda 5565 (W-2508368). GUATEMALA: Alta Verapaz: Williams, Molina R., Williams, & Molina 40076 (N). Chiquimula: Harmon & Dwyer 3715 (N, W-2705580); Molina R. & Molina 25343 (Ld). Santa Rosa: Heyde & Lux 4385 (Mu-3824). HONDURAS: Choluteca: Molina R. 1310 (N); Molina R. & Molina 24585 (N). Copán: Molina R. & Molina 24696 (Ld). Intibucá: Molina R. & Molina 25530 (N). Lampira: Hazlett 775 (E-2162955). Santa Bárbara: Molina R. 21989 (N), 22062 (N). EL SALVADOR: La Libertad: Molina R. 21450 (N). Sonsonate: Molina R. & Montalvo 21698 (N). NICARAGUA: Estelí: Molina R. 23049 (N); Williams & Molina R. 42384 (W-2734849). Granada: E. B. Nelson 7510 (Bm); F. C. Seymour 7510 (N). León: Hamblett, Nichols, & Dudley 219 (E-2134858). Managua: Atwood 2823 (E-2134856); Neill 758 [7980] (Z). Masaya: Hall & Bockus 7889 (Ld, N); F. C. Seymour 3319 (E-2134857). COSTA RICA: Alajuela: Molina R. 13556 (W-2568207); Wilbur & Stone 9912 (N). Cafias: Frankie 319a (E-2121502). Cartago: Pittier 2519 [Herb. Nat. Costaric. 13215] (Mu-3825). Guanacaste: Heithaus 474 (N); Jiménez M. 1576 (N, W-2751893, Ws, Ws), 4183 (N). San José: J. Taylor 17303 (N, W-2770894); Tonduz & Biolley 7218 (Mu-3781). PANAMA: Chiriquí: White & White 103 (E-1176346).

LIPPIA CARVIODORA Meikle

Additional bibliography: Cosgrove & al., Colonial Fl. & Animal Prod. Gt. Brit. 1: 56-62. 1950; Cosgrove & al., Chem. Abstr. 44: 11033. 1950; Islip & Matthews, Colonial Fl. & Animal Prod. Gt. Brit. 2: 96-101. 1951; Islip & Matthews, Chem. Abstr. 48: 6073. 1954; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14357. 1958; Dale & Greenway, Kenya Trees 588. 1961; Watt & Breyer-Brandwijk, Med. & Poison. Pl. S. & East Afr., ed. 2, 1051 & 1410. 1962; Hirata, Host Range & Geogr. Distrib. Powd. Mild. 276. 1966; Moldenke, Phytologia 14: 405. 1967; Farnsworth, Blomster, Quimby, & Schermerh., Lynn Index 6: 264. 1969; Moldenke, Fifth Summ. 1: 241 (1971) and 2: 890. 1971; Hegnauer, Chemotax. Pfl. 6 [Chem. Reihe 21]: 668. 1973.

Cosgrove and his associates (1950) have isolated aldehydes, ketones, and esters in volatile oil from the flowers of this plant; Islip & Matthews (1951) found d-limonene in volatile oil in the leaves. Watt & Breyer-Brandwijk (1962) summarize the situation as follows: "Material of Lippia carviadora Meikle from Kenya and Somaliland has been investigated for its volatile oil content.....Kenya.....material yields 1 percent from the flower

head and from the leaf. The oil contains 60 per cent of aldehydes and ketones mainly as d-carvone. Dry leaf from Somaliland.. yields volatile oil to the extent of 3.15 per cent from flower-head and 0.99 per cent from leaf and twig."

Hirata (1966) records a species of the powdery mildew genus Leveillula as infesting the plant in Kenya.

LIPPIA CARVIODORA var. MINOR Meikle

Additional bibliography: Moldenke, *Phytologia* 12: 118. 1965; Moldenke, *Fifth Summ.* 1: 213 & 241 (1971) and 2: 541, 542, & 890. 1971.

LIPPIA CENTAUREA A. Chiov.

Additional bibliography: Moldenke, *Phytologia* 12: 118—119. 1965; Moldenke, *Fifth Summ.* 1: 227 (1971) and 2: 890. 1971.

LIPPIA CHACENSIS Moldenke

This taxon is now regarded as conspecific with L. lorentzii Moldenke, which see.

LIPPIA CHEVALIERII Moldenke

Synonymy: Lippia chevalieri Moldenke apud Meikle in Hutchinson & Dalz., *Fl. W. Trop. Afr.*, ed. 2, 2: 437. 1963.

Additional & emended bibliography: Meikle in Hutchinson & Dalz., *Fl. W. Trop. Afr.*, ed. 2, 2: 432, 436, & 437. 1963; Meikle, *Kew Bull.* 17: 174. 1963; Townsend, *Excerpt. Bot. A.7*: 364. 1964; Berhaut, *Fl. Sénégal*, ed. 2, 153 & 167. 1967; Hocking, *Excerpt. Bot. A.10*: 271. 1967; Kerharo, *Bull. Inst. Fond. Afr. Noire A.29*: 1416, 1421, 1424, & 1429. 1967; Moldenke, *Phytologia* 14: 405. 1967; Moldenke, *Résumé Suppl.* 15: 6 & 7 (1967) and 16: 23. 1968; Adam, *Adansonia*, ser. 2, 8: 454. 1968; Adam, *Journ. Agr. Trop. & Bot. Appl.* 17: 289. 1970; Moldenke, *Fifth Summ.* 1: 210, 215—218, & 222 (1971) and 2: 552 & 890. 1971; Moldenke, *Phytologia* 38: 263 & 264. 1978.

Meikle (1963) gives in synonymy for this species: "L. adoensis of F. T. A. 5: 280, partly; F. W. T. A., ed. 1, 2: 270, partly, not of Hochst." and avers that it is related to L. savoryi Meikle. He keys out the related species as follows:

1. Flower-heads in spreading, much-branched corymbose cymes.
2. Upper leaf-surface smooth to touch, the venation obscure; stems subglabrous or sparsely appressed-pubescent; floral bracts very obtuse at the apex, shortly mucronate.....
L. multiflora.
- 2a. Upper leaf-surface rough to touch, the venation prominently rugose-reticulate; stems usually distinctly appressed-pubescent; floral bracts acute or cuspidate at the apex.....
L. rugosa.
- 1a. Floral-heads in narrow, elongated terminal and axillary whorls or spikes.
3. Floral bracts obtuse or short-cuspidate; leaves smooth or slightly scabridulous; stems subglabrous or sparsely appres-

sed-pubescent.....L. chevalierii.

3a. Floral bracts acute; leaves strongly scabrid; stems densely pubescent or pilose.....L. savoryi.

Adam (1968) notes that L. chevalierii is a "producteur possible de camphre....Plantes suffrutescentes recherchent les lieux les plus pauvres et recailleux." Common names recorded for it in Sénégal are "baé-bae", "balath", "borgal", "brégé", "dut", "gagorènt", "gâporèmp", "mbalat", "mbormbor", "sufuhô", and "wusuné koloma". According to Kerharo (1967) the name, "thé de Gambie", is applied to this species and also to L. abyssinica (Otto & Dietr.) Cuf. in Sénégal. Berhaut (1967) also records that name for L. chevalierii, but records, in addition, "bu sâg", "ganéka", and "mbalhat". He cites his no. 805 from Sénégal.

LIPPIA CHIAPASENSIS Loes.

Additional & amended bibliography: Loes., Verh. Bot. Ver. Brand. 53: 78--79 [Abhandl. 241]. 1912; Moldenke, Phytologia 14: 405. 1967; Moldenke, Résumé Suppl. 16: 23. 1968; Uphof, Dict. Econ. Pl., ed. 12, 315. 1968; Gibson, Fieldiana Bot. 24 (9): 207 & 209--210. 1970; Moldenke, Fifth Summ. 1: 71 & 80 (1971) and 2: 552 & 890. 1971; Moldenke, Phytologia 23: 415 (1972) and 28: 432. 1974.

Recent collectors describe this plant as a shrub, 1--2 m. tall, or a tree, 4 m. tall. They have found it growing on open limestone, in pine forests, on shrubby slopes, rocky hills in pine-oak forests, slopes with Pinus, Saurauia, Dodonaea, and Hauya, grassy slopes with Quercus or with Pinus and Quercus, and on slopes with Pinus, Quercus, Arbutus, and Juniperus, in ravines, and along roadsides in the dry mountain forest zone. Gibson (1970) says that it is found in "Wet or dry often rocky thickets or forests, frequently in pine-oak forests, sometimes in meadows". Breedlove & Thorne encountered it on dry slopes with Ficus, Hauya, Heliocarpus, Ipomoea, Quercus, and Juniperus. It has been found at altitudes of 1300--3000 m., in flower in January, March, April, July, and December and in fruit in March, April, and from November to January. The corollas are said to have been "white" on Laughlin 2714 & 2981 and "yellow turning cream" on Proctor 25324.

Uphof (1968) reduces L. chiapasensis to synonymy under L. umbellata Cav., but Gibson (1970) not only maintains it but reduces L. curtisiana Moldenke to its synonymy. She records it from Mexico and from Baja Verapaz, Huehuetenango, San Marcos, Sololá, and Totonicapán in Guatemala. She comments that "Although this plant has smaller flowering heads and generally smaller leaves than L. substrigosa Turcz., they appear to be closely related."

Material of L. chiapasensis has been misidentified and distributed in some herbaria as L. cardiostegia Benth. and even cited by me (1965) as L. curtisiana Moldenke. On the other hand, the Laughlin 400 and the Williams, Molina R., Williams, & Molina 40549, distributed as L. chiapasensis, are actually L. controversa Moldenke.

Additional & emended citations: MEXICO: Chiapas: Breedlove 9485 (Ld), 14073 (Ld), 15642 (Mi, N), 15652 (Ld); Breedlove & Dressler 29502 (N); Breedlove & Thorne 21323 (Ld, N); R. M. Laughlin 475 (W—2544426), 2714 (N, W—2556915), 2981 (W—2556821); F. Miranda 5012 (W—2508292), 5824 (W—2508298); Ton 1463 (N), 1473 (Mi), 1838 (Ld, W—2556705). GUATEMALA: Baja Verapaz: P. C. Standley 91197 (N). El Quiché: Proctor 25324 (Ld, Ld). Guatemala: Harmon & Dwyer 3076 (W—2705608). Huehuetenango: P. C. Standley 82044 (N). Sololá: Williams, Molina R., & Williams 23203 (N). Totonicapán: P. C. Standley 84076 (N).

LIPPIA CHRYSANTHA Greerm.

Additional bibliography: Moldenke, *Phytologia* 14: 405. 1967; Moldenke, *Fifth Summ.* 1: 71 (1971) and 2: 890. 1971.

The Lundells describe this species as a shrubby plant, the corolla-lobes white and the tube dark-yellow. Loesener (1912) cites Seler 2023 from "in planitie silva alta" in Oaxaca, the corolla yellow, flowering in February. He comments that "Die Art dürfte in die Gruppe Corymbosae (Schauer) Briq. zu stellen sein".

The Purpus 10519, distributed as L. chrysantha, actually is the type collection of Aloysia chiapensis Moldenke.

Additional citations: MEXICO: Morelos: Lundell & Lundell 12507 (Mi); Pringle 8679 (Mu—3988—*isotype*, Mu—4199—*isotype*).

LIPPIA CIPOENSIS Moldenke

Additional bibliography: Moldenke, *Phytologia* 13: 351. 1966; G. Taylor, *Ind. Kew. Suppl.* 13: 81. 1966; Moldenke, *Fifth Summ.* 1: 155 (1971) and 2: 890. 1971.

LIPPIA CONTERMINA Briq.

Additional & emended bibliography: Briq. in *Chod. & Hassl.*, *Bull. Herb. Boiss.*, ser. 2, 4: 1157--1158. 1904; Briq. in *Chod. & Hassl.*, *Pl. Hassler.* 2: 493--494. 1904; Burkart, *Excerpt. Bot. A.* 5: 585. 1962; Moldenke, *Phytologia* 13: 351. 1966; Moldenke, *Fifth Summ.* 1: 186 & 198 (1971) and 2: 567 & 890. 1971; Troncoso, *Darwiniana* 18: 340 & 410. 1974; Moldenke, *Phytologia* 38: 263. 1978.

LIPPIA CONTROVERSA Moldenke

Additional bibliography: Moldenke, *Phytologia* 14: 405--406. 1967; Gibson, *Fieldiana Bot.* 24 (9): 208 & 210. 1970; Moldenke, *Fifth Summ.* 1: 72, 80, 83, & 88 (1971) and 2: 563 & 890. 1971; Moldenke, *Phytologia* 25: 227 (1973) and 28: 433. 1974; Molina R., *Ceiba* 19: 96. 1975; Moldenke, *Phytologia* 34: 251 & 253. 1976.

Recent collectors describe this plant as an erect woody "herb", 1.5 m. tall, or an aromatic shrub, 1--4 m. tall, the leaves dark-green above, light-green beneath, and the inflorescence bracts pale-green. They have encountered it on valley floors, in open areas in forests, in moist thickets and wet mixed forests, on moist banks in mixed forests, and on gentle slopes with tropical deciduous forests of Bursera, Ceiba, and Heliocarpus, at altitudes

of 150—2250 meters. Standley refers to it as "occasional" and Heithaus as "uncommon", but the Molinas found it to be "frequent".

It has been found in anthesis from October to March and in fruit from November to March. The corollas are said to have been "cream" colored on Molina 13054, "pale-yellow" on McKee 11193, and "yellow" on Breedlove 20375, Laughlin 400, Molina 13219, and Williams & al. 26440 & 40540.

Gibson (1970) has reduced L. controversa var. brevipedunculata Moldenke to synonymy here. Material of L. controversa has been misidentified and distributed in some herbaria as L. chiapasensis Loes., L. lucens Standl., and L. oxyphyllaria (Donn. Sm.) Standl. On the other hand, the Williams, Molina R., & Williams 26440, distributed as L. controversa, actually is L. liberiensis Moldenke.

Additional citations: MEXICO: Chiapas: Breedlove 20375 (Ld, N), 28294 (Ld); R. M. Laughlin 400 (Ws). GUATEMALA: Alta Verapaz: Williams, Molina R., Williams, & Molina 40540 (N). Santa Rosa: Heyde & Lux 4387 (Mu). HONDURAS: Choluteca: Molina R. 13054 (Ld, N). El Paraíso: Molina R. 13219 (Ld, N, W—2568370). Intibucá: Molina R. & Molina 24429 (N). Morazán: P. C. Standley 13668 (N). COSTA RICA: Alajuela: McKee 11193 (P). Guanacaste: Heithaus 486 (E—2156239); Williams, Molina R., & Williams 26440 (W—2751895).

LIPPIA CONTROVERSA var. BREVIPEDUNCULATA Moldenke

Additional bibliography: Moldenke, *Phytologia* 12: 138. 1965; Gibson, *Fieldiana Bot.* 24 (9): 210. 1970; Moldenke, *Fifth Summ.* 1: 72 (1971) and 2: 890. 1971; Moldenke, *Phytologia* 34: 251 & 253. 1976.

Collectors describe this plant as a bush, 1 m. tall, and have found it in flower in May and December. Grashoff refers to it as "frequent" and with "yellow" corollas. Gibson (1970) reduces it to synonymy under typical L. controversa.

Additional citations: MEXICO: Oaxaca: Grashoff 229 (Ln—221668). NICARAGUA: Granada: Atwood A.202 (Ln).

LIPPIA CORIACEA Briq.

Additional bibliography: Burkart, *Excerpt. Bot.* A.5: 585. 1962; Moldenke, *Phytologia* 13: 351. 1966; Moldenke, *Fifth Summ.* 1: 186 (1971) and 2: 553 & 891. 1971; Troncoso, *Darwiniana* 18: 340 & 412. 1974.

LIPPIA CORYMBOSA Cham.

Additional synonymy: Lippia corymbosa Troncoso, *Darwiniana* 18: 412, sphalm. 1974.

Additional bibliography: Buek, *Gen. Spec. Syn. Candoll.* 3: 266. 1858; Moldenke, *Phytologia* 13: 351. 1966; Moldenke, *Fifth Summ.* 1: 155 (1971) and 2: 560 & 891. 1971; Troncoso, *Darwiniana* 18: 338 & 408—412. 1974; Moldenke, *Phytologia* 36: 44. 1977.

Recent collectors describe this species as an "herb, somewhat woody at base", as a viscous shrub, or as an ascending subshrub, 1—

2 m. tall, brittle and few-branched, or even as a perennial herb, 50 cm. tall, with few stems, the stems 0.75--1 m. tall, the leaves dark-green and aromatic, the flower-heads magenta, and the bracts rose-color, rose-violet, red-violet, or lavender-pink. They have found it growing in cerrado and on cerrado slopes, on steep sandstone slopes, in sandy soil, in open woods on rocky slopes, and along streams, at altitudes of 1000--1600 m., flowering from December to April, and in fruit in February. The corollas are said to have been "pink" on Harley & Lima 11495 and on Irwin & al. 19275, "pinkish-lavender" on Irwin & al. 28507, "lavender-pink" on Anderson 6459, "pinkish-magenta" on Irwin & al. 34135, "purple-pink" on Anderson 8843, "rose-pink, throat yellow" on Irwin & al. 32790, "magenta" on Irwin & al. 27508, "lilac" on Hatschbach & Ahumada 31643, "rose" on Giulietti & Lima 739, and "red-violet, tube white" on Irwin & al. 12847.

Anderson encountered the species "on rocky hillsides in region of rocky sandstone hilltop cerrado, seeping hillsides, rocky open cerrado in raised places on hillsides, and open mesophytic woods by stream". Irwin and his associates found it "occasional on rocky slopes and creek margins", "on outcrops in area of cerrado on steep slopes surrounded by campo", "on outcrops in area of campo on white sand and cerrado among outcrops", and "on brown sandy soil of cerrado".

Troncoso (1974) refers to L. corymbosa as the lectotype species of the Series Corymbosae Schau. and Subseries Corymbosae (Schau.) Briq., defined as characterized by "Cabezuelas subspiciformes o racemosas, laxas, corimboso-paniculadas".

The Martius s.n. [in campis aridiusculis ad S. de S. Anto. Jul.], distributed as L. corymbosa, actually is L. gardneriana Schau.

Additional citations: BRAZIL: Goiás: W. R. Anderson 6459 (Ld, N); Giulietti & Lima 739 (Z); Harley & Lima 11495 (N); Irwin, Anderson, Stieber, & Lee 34135 (N); Irwin, Grear, Souza, & Reis dos Santos 12847 (Ac, N); Irwin, Harley, & Smith 32790 (Ld, Ld, N, W--2709806), 32082 (Ac, W--2709879), 32808 (N); Irwin, Maxwell, & Wasshausen 19275 (Ld). Minas Gerais: W. R. Anderson 8843 (N); Hatschbach & Ahumada 31643 (Ac, Ld, W--2706100); Irwin, Fonsêca, Souza, Reis dos Santos, & Ramos 27508 (Ac), 28507 (Ld); Martius 1035 (Mu--34). State undetermined: Irwin & al. s.n. (N, N).

LIPPIA COSTARICENSIS Moldenke

Additional bibliography: Arthur, Mycologia 10: 133--134. 1918; Moldenke, Phytologia 13: 351. 1966; A. L. Moldenke, Phytologia 18: 123. 1969; Moldenke, Fifth Summ. 1: 88 & 91 (1971) and 2: 891. 1971; Moldenke in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 67, 71--72, & 146. 1973; Moldenke, Phytologia 34: 253. 1976.

Recent collectors describe this species as a shrub or tree, 4--12 m. tall, the trunk 8--36 cm. in diameter, the smaller branches square, the wood white, and the leaves rugose, slightly scabrous, with a strong, pleasant, mint-like aroma. They have found it

growing on slopes and in primary and cloud forests, at altitudes of 900—2333 meters, flowering in June and November, and in fruit in August. The corollas are said to have been "yellow" on Lent 2633.

Material of this species has been misidentified and distributed in some herbaria as L. brenesii Standl., L. myriocephala Schlecht. & Cham., and L. torresii Standl.

Additional citations: COSTA RICA: Heredia: Lent 721 (Ld), 2633 (N). San José: McCaffrey DMC.39 (N). PANAMA: Chiriquí: Kirkbride 143 (N); Stern & Chambers 88 [Yale wood no. 51599] (E—1739967).

LIPPIA CULMENICOLA Moldenke

Additional bibliography: Hocking, Excerpt. Bot. A.11: 505. 1967; Moldenke, Phytologia 14: 406. 1967; Moldenke, Biol. Abstr. 49: 2769. 1968; Moldenke, Fifth Summ. 1: 72 (1971) and 2: 891. 1971; Heslop-Harrison, Ind. Kew. Suppl. 15: 80. 1974.

Additional citations: MEXICO: Jalisco: R. McVaugh 23036 (Ip—isotype).

LIPPIA CURTISIANA Moldenke

Additional bibliography: Moldenke, Phytologia 13: 352. 1966; Gibson, Fieldiana Bot. 24 (9): 209. 1970; Moldenke, Fifth Summ. 1: 72 & 80 (1971) and 2: 891. 1971; Moldenke, Phytologia 23: 415 (1972) and 34: 251. 1976.

Recent collectors have found this plant growing in "lower chaparral with Acacia, Bernardia, Mimosa, Mortonia, Bouvardia, Dasyliiron, Cordia, Opuntia, Eysenhardtia, etc." and "in matorral espinosa lateral, chaparral on higher slopes, steep to very steep slopes of limestone in places higher up mineralized, calcareous soil, with Acacia berlandieri, A. crassifolia, Fouquieria, higher up with Quercus" and describe it as a "common rounded shrub". They have encountered it at 1800—3138 m. altitude, in flower and fruit in September. The corollas are said to have been "light-yellow" on Henrickson 13248.

Gibson (1970) reduces L. curtisiana to synonymy under L. chiapasensis Loes. Material of L. curtisiana has been misidentified and distributed in some herbaria as Cordia sp. On the other hand, the P. C. Standley 82044, 84076, & 91197, distributed as and previously cited by me (1965) as L. curtisiana, as well as Williams, Molina R., & Williams 23203, are actually L. chiapasensis Loes.

Additional citations: MEXICO: Coahuila: Chiang, Wendt, & Johnston 9547a (Ld); Henrickson 13248 (Ld). Durango: K. Reiche 782 (Mu).

LIPPIA DAUENSIS (Chiov.) Chiov.

Additional synonymy: Lippia dauensis Chiov. apud Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 574. 1941.

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 574. 1941; Glover, Prov. Check List Brit. & Ital.

Somal. 268. 1947; Dale & Greenway, Kenya Trees 588. 1961; Moldenke, Phytologia 12: 143-144. 1965; Moldenke, Fifth Summ. 1: 212, 213, & 241 (1971) and 2: 538, 554, & 811. 1971; Moldenke, Phytologia 25: 240. 1973.

Chiovenda (1932) cites Scasellati 2 & Senni 13644 from Somalia.

LIPPIA DIAMANTINENSIS Glaz.

Additional bibliography: Moldenke, Phytologia 13: 352. 1966.

LIPPIA DOMINGENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 14: 406. 1967; Moldenke, Fifth Summ. 1: 103 (1971) and 2: 891. 1971.

Recent collectors describe this plant as a woody shrub, 1 m. tall, much-branched and aromatic, the branches spreading and flexuous. The corollas are uniformly referred to as "white" on the four Liogier collections cited below. The species has been found growing commonly on limestone rocks, on bauxite, and in pine-lands on limestone and bauxite, at altitudes of 800-1300 meters, flowering in February, March, and July, and fruiting in March and July.

Material of this species has been misidentified and distributed in some herbaria as Lantana exarata Urb. & Ekm. or as Lantana sp.

Additional citations: HISPANIOLA: Dominican Republic: J. J. Jiménez 4469 (N); A. Liogier 13666 (N, Z), 13811 (Ac, N), 17922 (N); Liogier & Liogier 19656 (N).

LIPPIA DRACOCEPHALOIDES Turcz.

This taxon is now considered to be conspecific and synonymous with L. eupatorium Schau., which see.

LIPPIA DUARTII Moldenke

Additional bibliography: J. A. Clark, Card-Ind. Gen. Sp. Var. Pl. issue 245. 1965; Schubert, Assoc. Trop. Biol. Bull. 4: 73. 1965; Moldenke, Phytologia 13: 352. 1966; G. Taylor, Ind. Kew. Suppl. 14: 79. 1970; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 891. 1971.

LIPPIA DUMETORUM Herzog

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 44: 254. 1922; R. C. Foster, Contrib. Gray. Herb. 184: 170. 1958; Moldenke, Phytologia 13: 352. 1966; Moldenke, Résumé Suppl. 15: 5. 1967; Moldenke, Phytologia 25: 230. 1973; Moldenke, Fifth Summ. 1: 183 (1971) and 2: 891. 1971; Troncoso, Darwiniana 18: 337 & 410. 1974.

Recent collectors describe this plant as an herb or slender aromatic shrub, 0.5-1.5 m. tall, and have encountered it at 500-1250 meters altitude, flowering in May, June, and September. Fosberg reports it "common" in low brush in dry secondgrowth with open, severely burned, grassy areas on slopes and crests, while Steinbach found it "rather frequent" on slopes of wet woodland hillsides. The corollas are said to have been "white" on Fosberg

28603, "greenish-white" on Krapovickas & al. 19169, "creamy-white, yellow in inner center" on Steinbach 333. The last-mentioned collector also notes "caliz verde claro fel oso".

Material of L. dumetorum has been misidentified and distributed in some herbaria as L. origanoides H.B.K., a closely related species of northern South America.

Additional citations: BOLIVIA: Santa Cruz: F. R. Fosberg 28603 (Ld); R. F. Steinbach 333 (N, S, Ut—328761B, W—2533284, Z). Tarija: Krapovickas, Mroginsky, & Fernández 19169 (Ws).

LIPPIA DURANGENSIS Moldenke

Additional bibliography: Moldenke, *Phytologia* 13: 352. 1966; Moldenke, *Fifth Summ.* 1: 72 (1971) and 2: 554, 563, & 891. 1971.

LIPPIA EKMANI Moldenke

Synonymy: Lippia ekmanii Moldenke, *Fifth Summ.* 2: 554. in syn. 1971.

Additional bibliography: Moldenke, *Phytologia* 13: 352. 1966; Moldenke, *Résumé Suppl.* 16: 24. 1968; Moldenke, *Fifth Summ.* 1: 155 & 198 (1971) and 2: 554 & 891. 1971; Troncoso, *Darwiniana* 18: 337 & 410. 1974; Moldenke, *Phytologia* 34: 260. 1976.

Recent collectors have found this plant "en bajo pantanoso", "com xilopódio, invasora de lavoura de soja", and on campos. The corollas are said to have been "white" on Krapovickas & al. 15185 and on Schinini & Carnevali 10302. It has been found in anthesis in April and November and in fruit in April.

Additional citations: BRAZIL: Rio Grande do Sul: Irgang ICN. 9797 (Ut—320446); Pivetta 1157 [Herb. Anchieta 61369] (B). ARGENTINA: Corrientes: Schinini & Carnevali 10302 (Ld). Misiones: Krapovickas, Cristóbal, Maruñak, Pire, & Tressens 15185 (Z).

LIPPIA ELEGANS Cham.

Additional bibliography: Buek, *Gen. Spec. Syn. Candoll.* 3: 266. 1858; Moldenke, *Phytologia* 13: 352. 1966; Anon., *Biol. Abstr.* 51 (16): B.A.S.I.C. S.126. 1970; Moldenke, *Biol. Abstr.* 51: 9025. 1970; Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 4: 835 & xi, map 1385. 1971; Moldenke, *Fifth Summ.* 1: 155 (1971) and 2: 891. 1971.

Recent collectors describe this species as a broad-crowned shrub or subshrub, 0.5—3 m. tall, or the stems to 3 m. long and leaning on forest shrubs. They have found it growing in cerrado, among boulders on slopes, on "campo cerrado" at the edge of "despada", in mesophytic woods with cerrado on upper drier slopes, in gallery margins in areas of gallery forests and adjacent cerrado, areas of wooded creek margins and cutover cerrado, and areas of cerrado and gallery woods in steep rocky gorges, also in campo thickets in areas of disturbed slope forests and adjacent rocky campo, at altitudes of 650—1200 meters, flowering in February, March, May, and June. Hatschbach encountered it in "cerrado solo pedregoso, borda da serra". The corollas are said to have been "white" on

Anderson 7341, Irwin & al. 12462, 24817, & 27193, Murça Pires 58039, and Trinta 646, "white, throat yellow" on Irwin & al. 31842, "white, tube pink at base outside" on Irwin & al. 20825, "cream" on Hatschbach 34152, and "whitish, inside of tube yellow" on Hatschbach 31946. The leaves on P. Clausen s.n., cited below, are much smaller and more abundant than seen on most other material of this species.

The Angely (1971) reference in the bibliography above is sometimes cited by its titlepage date of "1970", but was not actually issued until 1971.

Material of L. elegans has been misidentified and distributed in some herbaria as L. sidoides Cham.

Additional citations: BRAZIL: Goiás: W. R. Anderson 7341 (Ld, N); Irwin, Grear, Souza, & Reis dos Santos 12462 (Ac, N); Irwin, Harley, & Smith 31842 (Ld, Ld, N, W-2709632); Irwin, Reis dos Santos, Souza, & Fonsêca 24817 (Ld, N), 24446 (Ac, N). Mato Grosso: Hatschbach 31946 (Ld, N, W-2744571), 34152 (Ld). Minas Gerais: A. Castellanos 25407 [Herb. FEEMA 4215] (Ld); P. Clausen s.n. [Aug.-April 1840] (Mu-4313); Irwin, Fonsêca, Souza, Reis dos Santos, & Ramos 27193 (Ld); Irwin, Maxwell, & Wasshausen 20825 (Ld, N); Murça Pires 58039 (W-2571102A); Trinta 646 [Fromm 1722; Herb. Brad. 29811] (N). State undetermined: Martius 1037 (Mu-110, Mu-1213, Z).

LIPPIA ELEGANS var. OBTUSIFOLIA Moldenke, Phytologia 19: 319. 1970.

Bibliography: Anon., Biol. Abstr. 51 (16): B.A.S.I.C. S.126. 1970; Moldenke, Biol. Abstr. 51: 9025. 1970; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 891. 1971.

Citations: BRAZIL: Goiás: Barrosa, Lima, & Lima 568 (N-type).

LIPPIA ELLIPTICA Schau.

Additional bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 266. 1858; Moldenke, Phytologia 13: 353. 1966; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 891. 1971; Troncoso, Darwiniana 18: 339 & 410. 1974; Moldenke, Phytologia 31: 384 (1975) and 36: 34. 1977.

The Duarte 7850 [Herb. Brad. 27897], previously cited by me (1965) as L. elliptica, actually is now the type collection of L. bradeana Moldenke.

LIPPIA ELLIPTICA var. SILVICOLA Moldenke, Phytologia 31: 230-231. 1975.

Bibliography: Moldenke, Phytologia 31: 230-231 & 384. 1975.

Citations: BRAZIL: Bahia: Harley, Renvoize, Erskine, Brighton, & Pinheiro in Harley 16436 (Z-type).

LIPPIA EUPATORIUM Schau.

Synonymy: Lippia dracocephaloides Turcz., Bull. Soc. Nat. Mosc. 36 (2): 205. 1863. Lippia dracocephaloides DC. ex Moldenke, Fifth Summ. 2: 553, in syn. 1971.

Additional & emended bibliography: Buek, Gen. Spec. Syn. Candol. 3: 266. 1858; Turcz., Bull. Soc. Nat. Mosc. 36 (2): 205. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 95 (1894) and imp. 2, 2: 95. 1946; Moldenke, Alph. List Cit. 1: 223 (1946) and 3: 692 & 695. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80, 189, & 190. 1949; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 95. 1960; Moldenke, Résumé Suppl. 8: 2 & 4. 1964; Moldenke, Phytologia 12: 24, 146—147, & 153—154 (1965) and 13: 352. 1966; El-Gazzar & Wats., New Phytol. 69: 483 & 485. 1970; Anon., Biol. Abstr. 52 (18): B.A.S.I.C. S.146. 1971; Moldenke, Biol. Abstr. 52: 9943. 1971; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 553, 554, & 891. 1971; Moldenke, Phytologia 25: 229. 1973; El-Gazzar, Egypt. Journ. Bot. 17: 75 & 78. 1974; Troncoso, Darwiniana 18: 339 & 410. 1974.

Recent collectors describe this plant as an erect, few-branched, often nearly defoliated shrub or subshrub, 0.75—1 m. tall, the bracts light-violet, and the fruit yellow-green. They have encountered it in cerrado or rocky campo, or in sandy soil of rocky cerrado in areas of gallery forest, adjacent brejo, and drier higher slopes with grassy campo or rocky cerrado. Irwin and his associates refer to it as "occasional" on steep campo slopes, while Hatschbach found it in "cerrado encosta rochosa de morro". It has been found growing at altitudes of 700—1230 meters, flowering in May and September, and fruiting in February and September. The corollas are said to have been "yellow" on Anderson 10426 and on Hatschbach 36696 & 36899.

The Pohl s.n., distributed as L. eupatorium, actually is L. bradeana var. velutina Moldenke. Lippia dracocephaloides is based on G. Gardner 4334 from Goiás, Brazil.

Additional & emended citations: BRAZIL: Distrito Federal: Hatschbach 36696 (Ac); Héringer 8939/1133 (N); Irwin & Soderstrom 6249 (N). Goiás: W. R. Anderson 10426 (N, Z); G. Gardner 4334 [Macbride photos 24648] (It—photo, Kr—photo, N, N—photo, W—photo); Hatschbach 36899 (Ld). Minas Gerais: Irwin, Onishi, Fonsêca, Souza, Reis dos Santos, & Ramos 26221 (N).

LIPPIA EUPATORIUM var. ANGUSTIFOLIA Moldenke, Phytologia 21: 253. 1971.

Bibliography: Anon., Biol. Abstr. 52 (18): B.A.S.I.C. S.146. 1971; Moldenke, Biol. Abstr. 52: 9943. 1971; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 891. 1971; Moldenke, Phytologia 21: 253 (1971) and 25: 229. 1973.

Collectors describe this plant as a slender, ascending or erect, nearly defoliated subshrub, with a single stem from a perennial base, 0.75—1 m. tall, the inflorescences rigidly nodding or pendent, the bracts light-violet, and the corollas yellow. They have encountered it on campos in areas of dense cerrado on hillsides and adjacent "campo limpo", on campos in areas of campo and cerrado, and "occasional" on steep campo slopes bordering gallery forests, at altitudes of 700—1100 meters, flowering in March.

Material of this variety has been distributed in some herbaria as L. dracocephaloides Turcz.

Citations: BRAZIL: Distrito Federal: Irwin & Soderstrom 6249 (N); Murça Pires, Silva, & Souza 9652 (Z—type). Goiás: W. R. Anderson 7683 (Ub); Irwin, Harley, & Smith 32005 (Ld, N, W—2709296).

LIPPIA FELIPPEI Moldenke

Additional bibliography: Schubert, Assoc. Trop. Biol. Bull. 4: 73. 1965; J. A. Clark, Card-Ind. Gen. Sp. & Var. Pl. issue 245. 1965; Moldenke, Phytologia 13: 353. 1966; G. Taylor, Ind. Kew. Suppl. 14: 79. 1970; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 891. 1971.

Hatschbach describes this plant as erect, 50 cm. tall, with rose-colored flowers (corollas? or bracts?), and encountered it in cerrado, flowering in July.

Additional citations: BRAZIL: Minas Gerais: Hatschbach 34563 (Ld); Laroca 30 (Z).

LIPPIA FERRUGINEA H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 215. 1817.

Additional & emended bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 215 (1817) and ed. quarto, 2: 265—266. 1818; Buek, Gen. Spec. Syn. Candoll. 3: 266. 1858; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 645, 649, & 654. 1960; Moldenke, Phytologia 14: 406. 1967; Moldenke, Fifth Summ. 1: 142 (1971) and 2: 549, 554, 568, & 891. 1971; Soukup, Biota 11: 14. 1976.

Recent collectors report that this species is common on steep, dry slopes, in reddish soil, with cacti and sparse brush, badly grazed by goats, at 1740—1800 m. altitude, and describe it as a slender aromatic shrub, flowering in June and July. The corollas are said to have been "white" on both collections cited below. The vernacular name, "tuyuguero", is reported for it.

Macbride (1960) cites Bonpland s.n., Raimondi s.n., Vargas 1462, and Weberbauer 6066 from Piura and Apurimac, Peru, noting that "Perhaps the Vargas specimen is L. Fiebrigii but the leaves are cremlate".

It should be noted that the corrected H.B.K. reference dates given here have been authenticated by Barnhart (1902).

Material of L. ferruginea has been misidentified and distributed in some herbaria as L. lopezii Moldenke.

Additional citations: PERU: Piura: F. R. Fosberg 27705 (Z); Sagástegui A., Cabanillas S., & Dios C. 8165 (N).

LIPPIA FILIFOLIA Mart. & Schau.

Additional bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 266. 1858; Moldenke, Phytologia 12: 157—158. 1965; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 554 & 891. 1971.

Recent collectors describe this plant as a subshrub, the slender stems 0.7—1 m. tall, and the corollas yellow, and have found it

growing in sandy soil of cerrado as well as in cerrado in areas of pebbly cerrado and sandy grassy campo, at 850--1150 m. altitude, flowering in February, June, and July.

Material of this species has been misidentified and distributed in some herbaria as Aspilia buphthalmifolia DC.

Additional citations: BRAZIL: Minas Gerais: W. R. Anderson 8606 (N); Hatschbach, Anderson, Barneby, & Gates 36408 (N, Z); Martius 1378 (Mu--39--cotype), s.n. [in campo desertis ad M. Serra de S. Anto. Jul.; Macbride photos 20324] (Mu--38--cotype); Mexia 5889 (Ba).

LIPPIA FLAVIDA Urb.

Additional bibliography: Moldenke, *Phytologia* 12: 158--159. 1965; Moldenke, *Fifth Summ.* 1: 103 (1971) and 2: 891. 1971.

Ekman found this species growing in "soft limestone". Ekman H.16082, distributed as L. flavida, actually is Lantana microcarpa Urb.

Additional citations: HISPANIOLA: Haiti: Ekman H.1817 (Ld).

LIPPIA FLORIDA Cham.

Additional bibliography: Buek, *Gen. Spec. Syn. Candoll.* 3: 266. 1858; Moldenke, *Phytologia* 13: 353. 1966; Moldenke, *Fifth Summ.* 1: 155 (1971) and 2: 891. 1971; Troncoso, *Darwiniana* 18: 339 & 410. 1974.

Recent collectors describe this plant as 1 m. tall, the bracts pale-violet to rose or purplish-rose, and have found it growing in rocky campos, "on open slopes with quartz gravel", and "in gravelly soil next to outcropping quartzite (itacolomite) slabs on knolls", at altitudes of 1030--1150 m., flowering in July and November. The Eitens describe the flowers as having the "corolla-tube white, throat golden-yellow", while Emygdio and his associates aver that the flowers were "yellow when young, rose in age".

The Williams & Assis 7160, distributed in some herbaria as L. florida, actually is L. pseudo-thea (A. St.-Hil.) Schau.

Additional & emended citations: BRAZIL: Minas Gerais: Eiten & Eiten 6840 (Ld, N, W--2688351), 6858 (Ac, W--2687468); Emygdio, Duarte, Becker, & Silva Santos 3351 (N); Hatschbach 29839 (W--2706161, Z); Héringer 5290 (Ld).

LIPPIA FORMOSA T. S. Brandeg.

Additional bibliography: Goldman, *Contrib. U. S. Nat. Herb.* 16: 262. 1916; E. W. Nels., *Mem. Nat. Acad. Sci.* 1 (16), imp. 1, 123 (1922) and 1 (16), imp. 2, 123. 1966; Moldenke, *Phytologia* 14: 406. 1967; Moldenke, *Fifth Summ.* 1: 72 (1971) and 2: 891. 1971.

Recent collectors describe this plant as a shrub, 2 m. tall, the bracts papery, pink to nearly white, and found it flowering in January. Moran refers to it as "rare" or only "a few plants seen" and speaks of the corollas as "lavender, deeper or yellow at center", while Wiggins describes them as with the "corolla-tube yellow at anthesis, turning lavender in age, lobes lavender". Goldman

(1916) says that "A flowering specimen of this species was taken between San Pedro and Tres Pachitas [Baja California]....south of La Paz, December 24. It was noted in several places in the same vicinity, growing 1.8 to 2.5 meters high along with other shrubby vegetation in the midst of a forest of Pachycereus calvus, one of the giant cactuses of the region. Brandegee describes it as a common bush with rather showy flowers, growing on the hills about Todos Santos." Brandegee (1893) also notes that "It is related to the Brazilian species of Schauer's section Rhodolippia".

Additional citations: MEXICO: Baja California: Diquet s.n. (N, P, P); R. V. Moran 6979 (Sd--50615, Tu--175448); Norland s.n. [April 7, 1955] (Sd--45816); Wiggins 14536 (Se--208913, Tu--169784).

LIPPIA FRAGRANS Turcz.

Additional bibliography: Solered., Syst. Anat. Dicot. Ergänz. 254 & 255. 1908; Reiche & Phil., Fl. Chil. 5: 298 & 299. 1910; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14358. 1958; Moldenke, Phytologia 13: 353. 1966; Moldenke, Fifth Summ. 1: 192 & 402 (1971) and 2: 554 & 891. 1971.

Additional citations: CHILE: Atacama: Geisse 49 (Mu--1841).

LIPPIA FRANCENSIS Moldenke

Synonymy: Lippia dictamnus Mart. ex Moldenke, Phytologia 36: 44, in syn. 1977.

Additional bibliography: Moldenke, Phytologia 13: 353. 1966; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 835. 1971; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 891. 1971; Moldenke, Phytologia 34: 258 (1976) and 36: 44. 1977.

The Lippia dictamnus of Martius appears to be based on Martius s.n. from Serro Frio, collected in July, 1851, deposited in the Munich herbarium.

The Angely (1971) reference, cited above, is sometimes cited as published in 1970, the title-page date, but, as has been previously stated, was not actually published until the following year.

Gibbs and his associates describe L. francensis as 1 m. tall, the corollas pale-lilac, and found it in flower in September. Material has been misidentified and distributed in some herbaria as L. gardneriana Schau., L. grandiflora Mart., and L. lupulina Cham.

Additional citations: BRAZIL: Goiás: Gibbs, Leitão Filho, Semir, Kinoshita, & Taroda 2777 (N); Lützelburg 388 (Mu), 1360 (Mu). Minas Gerais: Martius s.n. [Serro Frio, Julio 1851] (Mu--55).

LIPPIA GARDNERIANA Schau.

Additional bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 266. 1858; Moldenke, Phytologia 14: 406. 1967; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 891. 1971; Troncoso, Darwiniana 18: 339 & 410. 1974; Moldenke, Phytologia 36: 34. 1977.

Recent collectors describe this plant as a perennial herb or subshrub, 0.75--1.5 m. tall, the bracts purplish-pink to rose, and have encountered it in valleys and on wet slopes, at 800--1000 m. altitude, flowering in April and September. Anderson found it in "cerrado sloping down to gallery forest and 'brejo' (sedge meadow) at edge of forest". The corollas are said to have been "purple-pink" on Anderson 9503.

Material of L. gardneriana has been misidentified and distributed in some herbaria as L. corymbosa Cham. On the other hand, the Irwin & Soderstrom 7115 and Irwin, Souza, Grear, & Reis dos Santos 17812, distributed as L. gardneriana, actually represents L. primulina S. Moore.

Additional citations: BRAZIL: Goiás: W. R. Anderson 9503 (Ub); Haas & Belém 394 [Herb. Brad. 50506] (Ut--320431). Minas Gerais: Martius s.n. [in campis aridiusculis ad S. de S. Anto. Jul.] (Mu--33).

LIPPIA GEHRTII Moldenke

Synonymy: Lippia gerthii Moldenke apud Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 4: 835, sphalm. 1971. Lippia gerthii Moldenke apud Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 4: xi, sphalm. 1971.

Additional bibliography: Moldenke, Phytologia 14: 406. 1967; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 4: 835 & xi. 1971; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 891. 1971; A. L. Moldenke, Phytologia 23: 318. 1972; Moldenke, Phytologia 23: 433 (1972) and 28: 439. 1974.

As previously stated, the Angely (1971) reference, cited above, is often listed as published in 1970, the title-page date, but was not actually issued until 1971.

The Eitens and their associates describe L. gehrtii as an herb or shrub, 1--2 m. tall, and encountered it "in arboreal semi-closed cerrado of small trees and scattered shrubs -- scattered taller trees showing that the area was probably once a cerradão (a type of dense woodland), flowering in the dry season when few species are in flower." Others have found it in cerrado or in poor sandy soil of open shrubby cerrado, at altitudes of 750--780 m., flowering from May to July. The corollas were "rose, yellow inside of tube" on Hatschbach 34694, "rose" on Hatschbach 31880, and "lilac, inside of tube yellow" on Eiten & al. 2983.

Additional citations: BRAZIL: Mato Grosso: Hatschbach 31880 (Ld, N, W--2744572), 34694 (Ld). São Paulo: Eiten & Eiten 3282b (Ac); Eiten, Eiten, Felipe, & Freitas Campos 2983 (Ac, Ld, W--2745640).

LIPPIA GENTRYI Standl.

Additional bibliography: Moldenke, Phytologia 13: 354. 1966; Moldenke, Fifth Summ. 1: 72 (1971) and 2: 891. 1971.

Wiggins reports that the "flowers [are] yellow at anthesis,

later nearly white".

Additional citations: MEXICO: Durango: S. J. Walker s.n. [25 August 1968] (Z). Sinaloa: I. L. Wiggins 13187 (Sd—49134).

LIPPIA GLANDULOSA Schau.

Additional bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 266. 1858; Moldenke, Phytologia 14: 406. 1967; Moldenke, Résumé Suppl. 16: 6. 1968; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 555, 559, & 891. 1971.

Recent collectors describe this plant as a shrub, 1—2 m. tall, and have encountered it on grazed campos and cerrado in upland valleys and "encosta rochosas de morro", at altitudes of 1200—1500 m., flowering in December and February. Irwin and his associates found it to be "common on rocky slopes". The corollas are said to have been "white" on Irwin & al. 20432 and "whitish" on Hatschbach & Pelanda 27897.

Material of L. glandulosa has been distributed in some herbaria as L. gracilis Schau. and as "Labiatae". On the other hand, the Retter, Bertoldo, Castro, Santos, & Souza R.913, distributed as L. glandulosa, actually is L. stachyoides Cham.

Additional citations: BRAZIL: Distrito Federal: Murça Pires, Silva, & Souza 9095 (W—2564109); Sucre 384 (Ld). Minas Gerais: Hatschbach 27897 (N); Hatschbach & Pelada 27897 (Ld); Irwin, Maxwell, & Wasshausen 19579 (Ac, N), 20432 (Ld, N). State undetermined: Collector undetermined 1572 (E—116720).

LIPPIA GLAZIOVIANA Loes.

Additional bibliography: Moldenke, Phytologia 12: 171—172. 1965; Moldenke, Fifth Summ. 1: 155 (1971) and 2: 891. 1971; Moldenke, Phytologia 31: 384. 1975.

Recent collectors describe this plant as an erect, few-branched, spindly shrub or subshrub, 0.3—1 m. tall, growing from a xylodium, the bracts pinkish- or reddish-green. They have encountered it on campos, rocky campos, and rocky slopes, at altitudes of 1000—1500 meters, flowering from January to March as well as in May, September, and October, and fruiting in February and October. Harley and his associates found it in "grassland with low shrubs and scattered woodland", while Irwin and his associates encountered it on "grazed campo and cerrado in upland valleys" and "on outcrops in areas of cerrado on steep rocky slopes surrounded by campo". Hatschbach found it on "afloramentos rochosos".

The corollas are said to have been "rose" on Hatschbach 27041 & 29180, "rose-pink" on Irwin & al. 9399, "bright-pink" on Harley & al. 15541, "lilac-pink" on Irwin & al. 32832, "dull lavender-pink" on Irwin & al. 32798, "lilac, interior of tube whitish" on Hatschbach 36840, "red-purple, throat at first yellow, corolla finally concolorous" on Irwin & al. 12562, and "white" on Irwin & al. 19579.

Material of *L. glazioviana* has been misidentified and distributed in some herbaria as *L. gracilis* Schau.

Additional citations: BRAZIL: Bahia: Harley, Renvoize, Erskine, Brighton, & Pinheiro in Harley 15541 (Ld). Goiás: Hatschbach 36840 (Ld); Irwin, Grear, Souza, & Reis dos Santos 12562 (N, Z); Irwin, Harley, & Smith 32798 (Ld, N, W--2709805), 32832 (Ac, N, W--2709804); Irwin, Souza, & Reis dos Santos 9399 (N). Minas Gerais: Hatschbach 27041 (Ld), 29180 (Ld, W--2744561).

LIPPIA GOSSWEILERI S. Moore

Additional bibliography: Moldenke, *Phytologia* 12: 172. 1965; Moldenke, *Fifth Summ.* 1: 244 (1971) and 2: 891. 1971.

The original type (holotype) specimen of this species is deposited in the herbarium of the British Museum (Natural History) in London.

Additional citations: ANGOLA: Province undetermined: Gossweiler 3349 [Munonque; Mo. Bot. Gard. photo A.832] (Gz--photo of type, N-photo of type).

LIPPIA GRACILIS Schau.

Additional bibliography: Buek, *Gen. Spec. Syn. Candoll.* 3: 266. 1858; T. Peckolt, *Bericht. Deutsch. Pharm. Gesell.* 14: 469--470. 1904; Moldenke, *Phytologia* 13: 354. 1966; Moldenke, *Fifth Summ.* 1: 155 & 366 (1971) and 2: 563, 565, 891, & 968. 1971; Moldenke, *Phytologia* 34: 258 (1976) and 36: 34. 1977.

Recent collectors describe this plant as a slender, dense, or spindly, brittle shrub or perennial herb, 0.4--4 m. tall, the leaves rugose, dark-green above, paler or gray-green beneath, with "a sickly sage scent", and the bracts pale-green. They have found it growing at altitudes of 220--1200 m., flowering from January to July. Harley and his associates encountered it in "caatinga or caatinga/cerrado frequently burned- and cut-over", in "largely secondary woodland", "on dry quartzite hillside with disturbed woodland on lower slopes and scrub above", on "dry hillsides with quartzite metamorphic rocks and damp sandy riverbed with surrounding caatinga", and "in waste ground with scattered shrubs and marshy lake-margins". The Eitens found it "on flat narrow mountain top" and "flat ridge top with open tree canopy and lots of tall jurema (*Mimosa*) shrubs, the soil with no or few stones", reporting the local common name of "alacrim"; Irwin and his associates found it in cerrado, while Davidse and his associates report it "common in cerrado on flat plains, on cliffs by waterfalls", and in cerrado on sandy soil with *Aristida* and *Axonopus* being the dominant grasses.

The corollas are described as having been "white" on Davidse & al. 11763, 11963, & 12070, Eiten & Eiten 10807, Harley & al. 15158 & 16269, and Irwin & al. 14925, "pure-white" on Harley & al. 16444, "white with orange throat" on Harley & al. 16390, "white with golden-yellow throat" on Eiten & Eiten 4492, and "creamy-white with yellow throat" on Harley & al. 16778. [to be continued]